**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**
**(Attorney Docket № 13945US02)**

In the Application of:

Uri Elzur et al.

Serial No.: 10/652,327

Filed: August 29, 2003

For: SYSTEM AND METHOD FOR NETWORK INTERFACING IN A MULTIPLE NETWORK ENVIRONMENT

Examiner: Hoang, Hieu T.

Group Art Unit: 2452

Confirmation No.: 1636

**Electronically filed on February 19, 2010**

## APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from an Office Action dated August 13, 2009 ("Final Office Action"), in which claims 1-31 were finally rejected. The Appellant respectfully requests that the Board of Patent Appeals and Interferences ("Board") reverses the final rejection of claims 1-31 of the present application. The Appellant notes that this Appeal Brief is timely filed within the period for reply that ends on February 19, 2010.

## REAL PARTY IN INTEREST
## (37 C.F.R. § 41.37(c)(1)(i))

Broadcom Corporation, a corporation organized under the laws of the state of California, and having a place of business at 5300 California Avenue, Irvine, California 92617, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment recorded at Reel 014199, Frame 0991 in the PTO Assignment Search room.

## RELATED APPEALS AND INTERFERENCES
## (37 C.F.R. § 41.37(c)(1)(ii))

The Appellant is unaware of any related appeals or interferences.

## STATUS OF THE CLAIMS
## (37 C.F.R. § 41.37(c)(1)(iii))

The present application includes pending claims 1-31. Claims 29-31 are rejected under 35 USC 101 for allegedly directing to non-statutory subject matter. Claims 1-4, 15-20 and 23 are rejected under 35 USC 102(e) as anticipated by USP 6,226,680 ("Boucher"). Claims 10 and 11 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of USPP 2002/0198934 ("Kistler"). Claims 12-14 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of Microsoft Winsock Direct and Protocol Offload on SANs, 03/03/2001 ("Microsoft"). Claim 21 is rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim

18 above, and further in view of Official Notice ("ON"). Claim 22 is rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 18 above, and further in view of USPP 2002/0041566 ("Yang"). Claims 5-8 and 24-28 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of USPP 2003/0046330 ("Hayes"). Claim 29-31 are rejected under 35 USC 103(a) as being unpatentable over Boucher, and further in view of Callaghan (NFS over RDMA) ("Callaghan"). *See* the Final Office Action at pages 2-18. The Appellant identifies claims 1-31 as the claims that are being appealed. The text of the pending claims is provided in the Claims Appendix.

## STATUS OF AMENDMENTS
## (37 C.F.R. § 41.37(c)(1)(iv))

The Appellant has not amended any claims subsequent to the final rejection of claims 1-31 mailed on August 13, 2009.

## SUMMARY OF CLAIMED SUBJECT MATTER
## (37 C.F.R. § 41.37(c)(1)(v))

The Appellant has inserted Fig. 2 of the present application below, to illustrate several aspects of the invention.

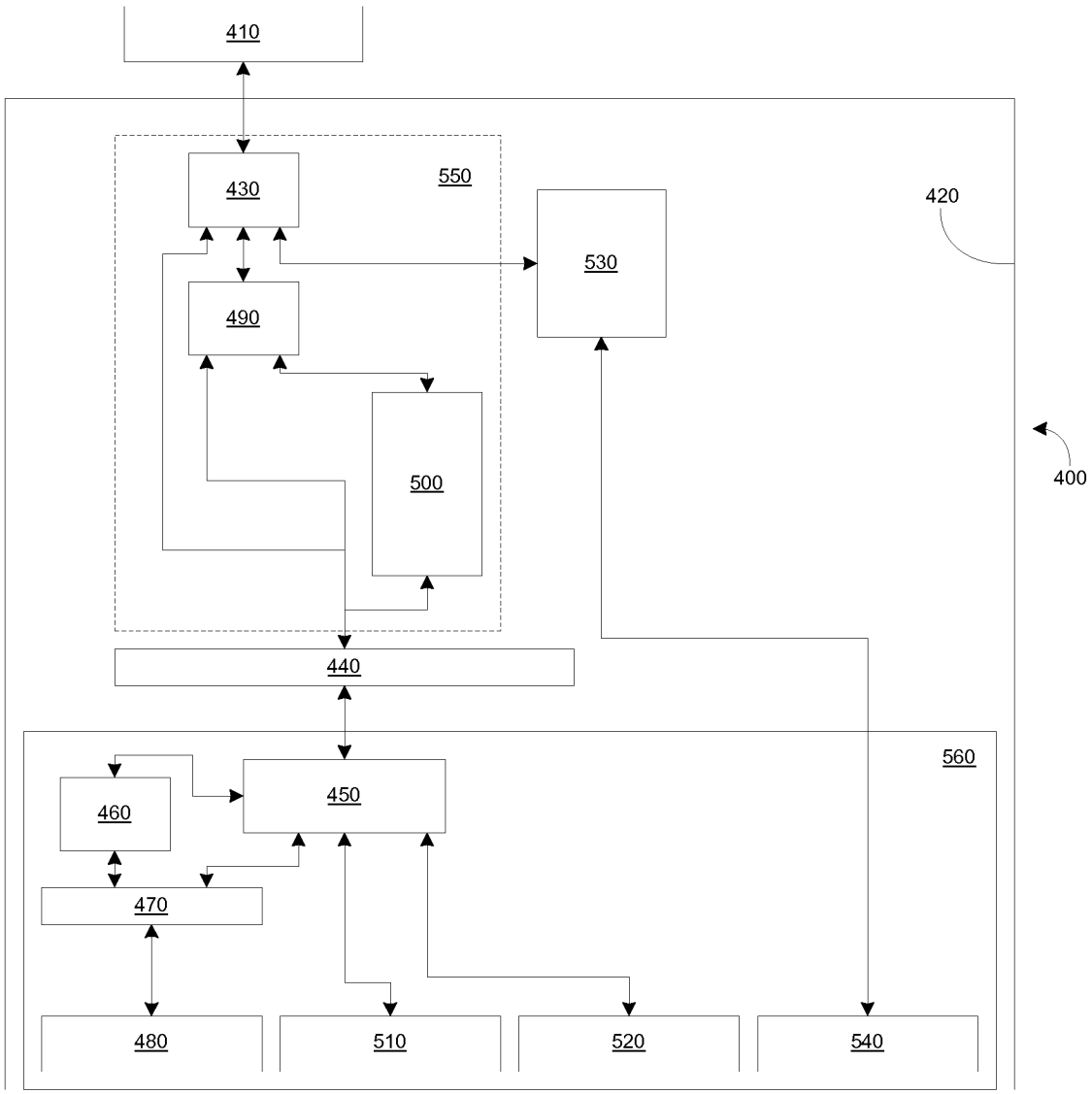



**FIG. 2**

The invention of claim 1 is illustratively described in, for example, the "Brief Summary of Invention" section (*see* present application at page 8, lines 2-10 and ¶¶18-26), as well as in the description of Figs. 2-3. **Independent claim 1 recites the following**:

A server (e.g., server 400 in Fig. 2), comprising:

a network connector (e.g., L2 Ethernet connector 410 in Fig. 2);

a processor (e.g., single integrated chip 550 in Figs. 2 and 3) coupled to the network connector (e.g., L2 Ethernet connector 410 in Fig. 2), the processor (e.g., single integrated chip 550 in Figs. 2 and 3) operable to process a plurality of different types of network traffic (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as traffic relating to operating system (OS) Agnostic Management Entity or device, also *see id* ¶¶20-26), wherein each of said plurality of different types of network traffic corresponds to a different network protocol (e.g., to name a few: TCP, TCP/IP, iSCSI/RDMA);

a peripheral component interface (PCI) bridge (e.g., PCI bridge 440 in Figs. 2 and 3) coupled to the processor (e.g., single integrated chip 550 in Figs. 2 and 3); and

a unified driver (e.g., unified driver 450 in Fig. 2) coupled to the PCI bridge (e.g., PCI bridge 440 in Figs. 2 and 3), the unified driver (e.g., unified driver 450 in Fig. 2) operable to provide drivers associated with the plurality of different types of network traffic (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as

traffic relating to operating system (OS) Agnostic Management Entity or device, also *see* ¶¶20-26).

Claims 2-17 are dependent directly or indirectly upon independent claim 1.

The invention of claim 18 is illustratively described in, for example, the "Brief Summary of Invention" section (*see* present application at page 8, lines 2-10 and ¶¶18-26), as well as in the description of Figs. 2-3. **Independent claim 18 recites the following**:

A method for network interfacing, comprising:

handling a plurality of different types of network traffic (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as traffic relating to operating system (OS) Agnostic Management Entity or device, also *see* ¶¶20-26) via a layer 2 (L2) connector (e.g., L2 Ethernet connector 410 in Fig. 2), wherein each of said plurality of different types of network traffic corresponds to a different network protocol (e.g., to name a few: TCP, TCP/IP, iSCSI/RDMA);

processing the different types of network traffic (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as traffic relating to operating

system (OS) Agnostic Management Entity or device, also *see id* ¶¶20-26) via a layer 2 (L2) connector (e.g., L2 Ethernet connector 410 in Fig. 2) in a single chip (e.g., single integrated chip 550 in Figs. 2 and 3); and

determining which of the different types of network traffic accesses software services (e.g., TCP stack 460, socket switch services 470, SCSI miniport service 510 and RDMA service 520, also *see id* ¶25) via a single data path (e.g., PCI bridge 440 in Figs. 2 and 3).

Claims 19-23 are dependent directly or indirectly upon independent claim 18.

The invention of claim 24 is illustratively described in, for example, the "Brief Summary of Invention" section (*see* present application at page 8, lines 2-10 and ¶¶18-26), as well as in the description of Figs. 2-3. **Independent claim 24 recites the following**:

A method for network interfacing, comprising:

handling a plurality of different types of network traffic (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as traffic relating to operating system (OS) Agnostic Management Entity or device, also *see id* ¶¶20-26) via a single Ethernet connector (e.g., L2 Ethernet connector 410 in Fig. 2), wherein each of said

plurality of different types of network traffic corresponds to a different network protocol (e.g., to name a few: TCP, TCP/IP, iSCSI/RDMA);

processing the plurality of different types of network traffic (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as traffic relating to operating system (OS) Agnostic Management Entity or device, also *see id* ¶¶20-26) using a layer 2 (L2) processor (e.g., L2 NIC 430 in Fig. 2), a layer 3 (L3) processor (e.g., TCP processor 490 in Fig. 2), a layer 4 (L4) processor (e.g., iSCSI/RDMA processor 500 in Fig. 2) and an upper layer protocol (ULP) processor; and

providing a unified data and control path (e.g., unified driver 450 coupled to the PCI bridge 440 in Figs. 2 and 3).

Claims 25-28 are dependent directly or indirectly upon independent claim 24.

The invention of claim 29 is illustratively described in, for example, the "Brief Summary of Invention" section (*see* present application at page 8, lines 2-10 and ¶¶18-26), as well as in the description of Figs. 2-3. **Independent claim 29 recites the following**:

A unified driver (e.g., unified driver 450 in Figs. 2 and 3), comprising:

a computer program executable on a computer system (*see id* ¶¶37-38), having at least one code section for arranging and processing network traffic, wherein the at

least one code section causes the computer system to perform steps comprising: executing said at least one code section from said unified driver in said computer system to handle a plurality of different types of network traffics (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as traffic relating to operating system (OS) Agnostic Management Entity or device, also *see id* ¶¶20-26) and/or network services (e.g., TCP stack 460, socket switch services 470, SCSI miniport service 510 and RDMA service 520, also *see id* ¶25) via a single PCI bridge (e.g., PCI bridge 440 in Figs. 2 and 3), wherein each of said plurality of different types of network traffic (e.g., to name a few: first type, common L2, L3 network traffic, second type, such as TCP accelerated offload traffic, third type, such as iSCSI/RDMA network storage traffic, fourth type, such as interprocess communication IPC traffic, fifth type, such as traffic relating to operating system (OS) Agnostic Management Entity or device, also *see id* ¶¶20-26) corresponds to a different network protocol (e.g., to name a few: TCP, TCP/IP, iSCSI/RDMA), and the network services comprise two or more of a socket service, storage service, RDMA service or keyboard/video/mouse service.

Claims 30-31 are dependent directly or indirectly upon independent claim 29.

## GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

The present application includes pending claims 1-31. Claims 29-31 are rejected under 35 USC 101 for allegedly directing to non-statutory subject matter. Claims 1-4, 15-20 and 23 are rejected under 35 USC 102(e) as anticipated by USP 6,226,680 ("Boucher"). Claims 10 and 11 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of USPP 2002/0198934 ("Kistler"). Claims 12-14 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of Microsoft Winsock Direct and Protocol Offload on SANs, 03/03/2001 ("Microsoft"). Claim 21 is rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 18 above, and further in view of Official Notice ("ON"). Claim 22 is rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 18 above, and further in view of USPP 2002/0041566 ("Yang"). Claims 5-8 and 24-28 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of USPP 2003/0046330 ("Hayes"). Claim 29-31 are rejected under 35 USC 103(a) as being unpatentable over Boucher, and further in view of Callaghan (NFS over RDMA) ("Callaghan"). *See* the Final Office Action at pages 2-18. The Appellant identifies claims 1-31 as the claims that are being appealed. The text of the pending claims is provided in the Claims Appendix.

## ARGUMENT
## (37 C.F.R. § 41.37(c)(1)(vii))

### I. Rejection to Claims 29-31 under 35 U.S.C. § 101

Claim 29 recites "A unified driver, comprising: a computer program **executable on a computer system**, having at least one code section **causes the computer system to perform steps** comprising: **executing said at least one code section from said unified driver in said computer system** to handle..." The Examiner (see Final Office Action in page 4) alleges that the driver comprises mere program code, and does not comprise any hardware elements in the computer system. The Appellant respectfully disagrees, and points out that claim 29 recites that the **unified driver executes the program codes in the computer system**. In this regard, the driver program code is tied to a computer system, which also cause the computer system to perform the recited steps. Therefore, the Appellant maintains that the recited unified driver is statutory subject matter and is patentable. The Appellant respectfully requests that the rejection to claim 29 under 35 USC 101 be withdrawn. Likewise, claims 30-31 depend from claim 29, and are submitted to be also patentable.

### REJECTION UNDER 35 U.S.C. § 102(e)

MPEP 2131 states:

> "[a] claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *See* MPEP at 2131 (internal citation omitted). Furthermore,

> "[t]he identical invention must be shown in as complete detail as is contained in the … claim." *See id.* (internal citation omitted).

## II. Boucher Does Not Anticipate Claim 1-4, 15-20 and 23

The Appellant turns to the rejection of claims 1-4, 15-20 and 23 under 35 U.S.C. § 102(e) as being anticipated by Boucher. Without conceding that Boucher qualifies as prior art under 35 U.S.C. 102(e), the Appellant respectfully traverses this rejection as follows.

### A. Independent Claims 1 and 18

With regard to the rejection of independent claim 1 under 35 U.S.C. § 102(e), the Appellant submits that Boucher does not disclose or suggest at least the limitation of "processor operable to process a plurality of different types of network traffic, wherein **each** of said plurality **of <u>different types of network traffic corresponds to a different network protocol</u>**," as recited in the Appellant's claim 1.

In the Final Office Action, the Examiner asserts Boucher discloses the following:

> "For claim 1, Boucher discloses a server, comprising:
>
> a network connector (fig. 13, col. 16 lines 6-12, network line 210, four network lines are presented for different conduits, but each of them is a media independent interface);
>
> a processor coupled to the network connector (fig. 13, microprocessor 470, col. 16 line 62-col. 17 line 13), the processor being operable to process **a plurality of different types of network traffic**, wherein each of said plurality of different types of network traffic corresponds to a different network protocol (abstract, col. 3 lines 35-67, col. 6 lines 33-55, col. 13 lines 24-35, **the intelligent network interface card INIC's processor supports an fast path candidate traffics and slow path traffics by identifying input packet protocol types**);

• a peripheral component interface (PCI) bridge coupled to the processor (fig. 13, PCI bus interface unit); and

• a unified driver coupled to the PCI bridge, the unified driver being operable to provide drivers associated with the plurality of different types of network traffic (fig. 6 and 10, PCI bridge 157 connected to protocol stack with driver, col. 14 l. 9-13, **INIC miniport driver determines whether the traffic is fast path candidate offload traffic or non-fast path IP and/or Ethernet traffic**).

*See* the Office Action in pages 5-6 (emphasis added). In order to help understanding, the Appellant has inserted Boucher's Figs. 13 and 4D for reference:

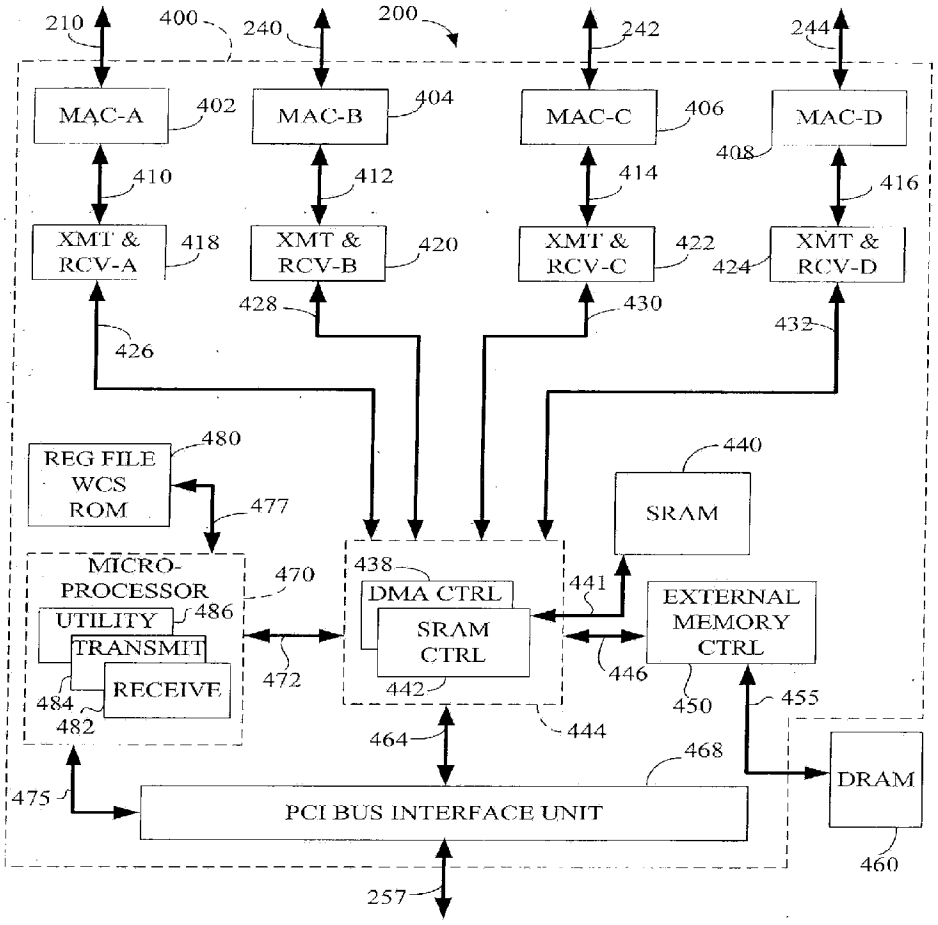



FIG. 13

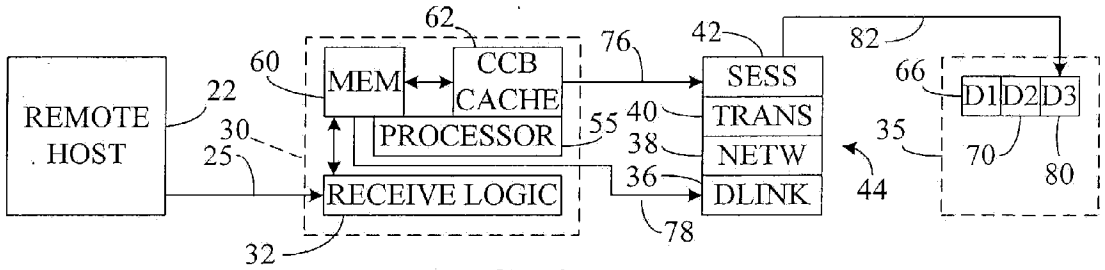



FIG. 4D

The Examiner relies for support on Boucher's fig. 13, and equates Boucher's MAC-A 402 to MAC-D, microprocessor 470 and PCI bus interface 468 to Appellant's "network connector", "processor" and "PCI bridge", respectively. The Examiner also equates Boucher's packets routed to slow path processing (e.g., path 56 via the protocol stack 44 in Boucher's Fig. 4A) and packets routed to fast path processing (e.g., path 72 by-passing the protocol stack 44 in Boucher's Fig. 4C) to Appellant's "plurality of different types of network traffic corresponds to different network protocol," as recited in claim 1. Specifically, the Examiner relies for support on the following citation of Boucher:

> "When a message packet or frame is received 47 from a network by the CPD, it is first validated by a hardware assist. This includes determining the protocol types of the various layers, verifying relevant checksums, and summarizing 57 these findings into a status word or words. Included in these words is an indication whether or not the frame is a candidate for fast-path data flow. Selection 59 of fast-path candidates is based on whether the host may benefit from this message connection being handled by the CPD, which includes determining whether the packet has header bytes denoting particular protocols, such as TCP/IP or SPX/IPX for example. The small percent of frames that are not fast-path candidates are sent 61 to the host protocol stacks for slow-path protocol processing. Subsequent network microprocessor work with each fast-path candidate determines whether a fast-path connection such as a TCP or SPX CCB is

> already extant for that candidate, or whether that candidate may be used to set up a new fast-path connection, such as for a TTCP/IP transaction. The validation provided by the CPD provides acceleration whether a frame is processed by the fast-path or a slow-path, as only error free, validated frames are processed by the host CPU even for the slow-path processing."

*See* Boucher at col. 6, lines 33-55. In the above citation, the Examiner relied on Boucher's flow chart (step 59) in Fig. 3, which identifies the packet being a fast path or slow path candidate based on the packet header bytes which denote particular protocols. In other words, the Examiner alleges that the fast path packet header protocol and the slow path header protocol denote **different network traffic types**.

The Appellant respectfully disagrees, and points out that MPEP 2141.02-VI states that "prior art must be considered in its entirety, including disclosures that teach away from the claims". Namely, the Appellant refers the Examiner to another portion of Boucher's disclosure, which contrasts the above allegation of the Examiner. For example, Boucher states the following:

> "In effect, **the fast-path replaces the states that are traditionally found in several layers of a conventional network stack** with a single state machine encompassing all those layers, in contrast to conventional rules that require rigorous differentiation and separation of protocol layers. **The host retains a sequential protocol processing stack which can be employed for setting up a fast-path connection or processing message exceptions**. The specialized micro-processor and the host intelligently choose whether a given message or portion of a message is processed by the microprocessor or the host stack."

*See* Boucher col. 3, line 60 – col. 4, line 3 (emphasis added). Boucher discloses that the fast-path processing is a replacement of the traditional protocol stack

processing path. Furthermore, Boucher also discloses that the host retains the same protocol stack processing for setting up a fast-path connection for future processing of the fast-path packets or to the message exceptions. In other words, there is no difference in terms of "network traffic type" between Boucher's fast-path candidate packet and the traditional slow-path candidate packet. Boucher discloses that both the fast-path candidate packet and the slow-path candidate packet are of the same "offload" network traffic type, but may be processed with different paths for the purpose of processing efficiency only, and not because of different network traffic types, as alleged by the Examiner.

Accordingly, Boucher's disclosure of the particular protocol indicated by the header bytes in the respective packets, is only for purposes of identifying which path the packet may be routed for efficient processing. This is further evidenced by Boucher's Fig. 4D, which illustrates that a fast path candidate may be processed by the traditional slow-path via the protocol stack 44 in an exceptional case.

Even if we assume, arguendo, that Boucher's fast-path candidate packet's header protocol indicates a different network traffic type than the slow-path protocol network traffic type, then the fast-path protocol network traffic type would not be recognized and processed by the traditional slow-path protocol stack in the host (which allegedly only processes the slow-path traffic network protocol). Therefore, based on the above rationale, the Appellant maintains that the Examiner's interpretation that

Boucher's fast-path candidate packet is of a different network traffic type than the traditional slow-path candidate packet is, in fact, contrary to Boucher's disclosure.

The Examiner (*see* Final Office Action in page 2) also argued that Boucher's disclosure of "determining whether the packets packet has header bytes denoting particular protocols, such as (TCP/IP or SPX/IPX)" constitutes "different types of network traffic" (*see* Boucher at col. 6, lines13-32). The Examiner is again referred to the Appellant's above arguments, namely, that Boucher discloses that **the fast-path processing is merely a replacement path for efficiency purposes only, and not because it is a different network traffic type**. Boucher, in Fig. 3 (step 57) determines whether the incoming frame contains an indication allowing fast-path processing. If such an indication is absent, then slow-path processing is allowed. In this regard, the fast-path candidate packet can equally be processed by the slow-path protocol stack. In addition, Boucher simply discloses that the incoming frame may be from similar protocols (e.g., TCP/IP or SPX/IPX), but the fact remains that for a given incoming frame, the fast-path and the slow-path processing apply to the same incoming frame of a given network traffic type (i.e., there is no processing of "different types of network traffic"). Therefore, the Examiner's above argument that the (TCP/IP or SPX/IPX)" constitutes "different types of network traffic", is not relevant because regardless of whether the incoming frame is TCP/IP or SPX/IPX, fast- and slow-path processing apply to the same traffic type.

Based on the foregoing rationale, the Appellant maintains that Boucher does not disclose or "…the processor operable to process a plurality of different types of network

traffic, wherein **each** of said plurality **of <u>different types of network traffic corresponds to a different network protocol</u>**," as recited in the Appellant's claim 1. The Appellant submits that claim 1 is allowable. Likewise, independent claim 18 is similar in many respects to claim 1, and therefore is also submitted to be allowable. The Appellant respectfully requests that the rejection of independent claims 1 and 18 under 35 U.S.C. § 102(e) be withdrawn.

### B. Dependent Claims 2-4, 15-20 and 23

Based on at least the foregoing, the Appellant believes the rejection of the independent claims 1 and 18 under 35 U.S.C. § 102(e) as being anticipated by Boucher has been overcome and should be withdrawn. The Appellant submits that claims 2-4, 15-20 and 23 depend directly or indirectly from the independent claims 1 and 18, and are, consequently, also respectfully submitted to be allowable, and requests that the rejection under 35 U.S.C. § 102(e) be withdrawn.

### C. Rejection of Dependent Claims 3 and 19

The Examiner stated the following in the Final Office Action (*see* page 7):

> "For claim 3, Boucher further discloses the plurality of different types of network traffic comprises **two or more of common Ethernet traffic**, offload traffic, storage traffic, interprocess communication (IPC) traffic, management traffic and remote direct memory access (RDMA) traffic (abstract, col. 3 lines 35-67, col. 13 lines 24-35, the intelligent network interface card INIC's processor supports an offload traffic protocols via fast path and regular IP traffic protocols via a slow path, or Ethernet traffic and offload traffic)."

The Appellant has reviewed the Examiner's citation in Boucher's abstract, col. 3, lines 35-67, and col. 13, lines 24-35, and points out that Boucher discloses only one type of network traffic, i.e. the offload traffic by fast path (via the INIC processor and DMA controller) or slow path (via the host protocol stack). **Boucher simply does not disclose other network traffic types, namely, "the storage traffic, IPC, management traffic and RDMA traffic**," as recited in Appellant's claim 3. Claim 3 is submitted to be allowable based at least on this rationale. Claim 19 is allowable for at least the same rationale as discussed with respect to claim 3.

### D. Rejection of Dependent Claim 15

The Examiner stated the following in the Final Office Action (*see* page 7):

> "For claim 15, Boucher further discloses the processor or the PCI bridge determines which of the different types of network traffic accesses a particular service provided by the server (fig. 10 and 11, col. 141.9-13 and 61-66, INIC miniport driver determines whether the traffic is fast path offload traffic protocol and slow path traffic protocol)."

The Appellant refers the Examiner to the same argument set forth above with respect to claim 1, that the fast path and the slow path traffic are not different network traffic types. In this regard, Boucher does not disclose or suggest "the processor or the PCI bridge determines which of the different types of network traffic accesses a particular service provided by the server," as recited in Appellant's claim 15. Claim 15 is submitted to be allowable based on this rationale.

### E. Rejection of Dependent Claims 17 and 23

The Examiner stated the following in the Final Office Action (*see* page 7):

> "For claim 17, Boucher further discloses the processor, the PCI bridge or the unified driver provides a unified data and control path (fig. 10 and 11, col. 14 l. 9-13 and 61-66, INIC miniport driver determines whether the traffic is fast path offload traffic protocol and slow path IP traffic protocol)."

The Appellant refers the Examiner to the same argument set forth above with respect to claim 1, that the fast path and the slow path traffic are not different network traffic types. In this regard, Boucher does not disclose or suggest "the processor, the PCI bridge or the unified driver provides a unified data and control path," as recited in Appellant's claim 17. Claim 17 is submitted to be allowable based at least on this rationale. Claim 23 is also allowable for the same rationale discussed with respect to claim 17.

### REJECTION UNDER 35 U.S.C. § 103

In order for a *prima facie* case of obviousness to be established, the Manual of Patent Examining Procedure, Rev. 6, Sep. 2007 ("MPEP") states the following:

> The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."

*See* the MPEP at § 2142, citing *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), and *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d at 1396

(quoting Federal Circuit statement with approval). Further, MPEP § 2143.01 states that "the mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art" (citing *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007)). Additionally, if a *prima facie* case of obviousness is not established, the Appellant is under no obligation to submit evidence of nonobviousness:

> The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

*See* MPEP at § 2142.

## III. The Proposed Combination of Boucher and Kistler, Does Not Render Claims 10 and 11 Unpatentable

Claims 10 and 11 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of Kistler.

Based on at least the foregoing, the Appellant believes the rejection of the independent claims 1 and 18 under 35 U.S.C. § 102(e) as being anticipated by Boucher has been overcome and should be withdrawn. Kistler does not overcome Boucher's deficiency in disclosing the Appellant's limitation. The Appellant submits that claims 10-11 depend directly or indirectly from the independent claim 1, and are, consequently, also respectfully submitted to be allowable, and requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

## A. Rejection of Dependent Claims 10 and 11

The Examiner stated the following in the Final Office Action (*see* page 10):

> "For claims.10 and 11, Boucher discloses the invention as in claim 1. Boucher does not disclose a server management agent coupled to the processor that is coupled to a keyboard and/or video and/or mouse service. However, Kistler discloses the same (fig. 3 **keyboard and mouse connected to an emulator that is coupled to a NIC**).
>
> Therefore, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Boucher and Kistler to provide console interaction handling over the network (Kistler, abstract) "For claim 15, Boucher further discloses the processor or the PCI bridge determines which of the different types of network traffic accesses a particular service provided by the server (fig. 10 and 11, col. 141.9-13 and 61-66, INIC miniport driver determines whether the traffic is fast path offload traffic protocol and slow path traffic protocol)."

The Examiner seems to equate Kistler's emulator 324 to Appellant's "server management agent". The Appellant respectfully disagrees, and points out that Kistler's emulator is merely an application (*see* Kistler at ¶0025) running within the operating system 322, and Kistler does not disclose or suggest that the emulator 324 performs any "server management" functions. In this regard, Kistler does not disclose or suggest "a server management agent coupled to the processor," as recited in claim 10 or "the server management agent is coupled to a keyboard and/or video and/or mouse service," as recited in claim 11. Claims 10 and 11 are submitted to be allowable.

## IV. The Proposed Combination of Boucher and Microsoft, Does Not Render Claims 12 - 14 Unpatentable

Claims 12-14 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of Microsoft.

Based on at least the foregoing, the Appellant believes the rejection of the independent claims 1 and 18 under 35 U.S.C. § 102(e) as being anticipated by Boucher has been overcome and should be withdrawn. Microsoft does not overcome Boucher's deficiency in disclosing the Appellant's limitation. In addition, the Appellant submits that claims 12-14 depend directly or indirectly from independent claim 1, and are, consequently, also respectfully submitted to be allowable. The Appellant respectfully requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

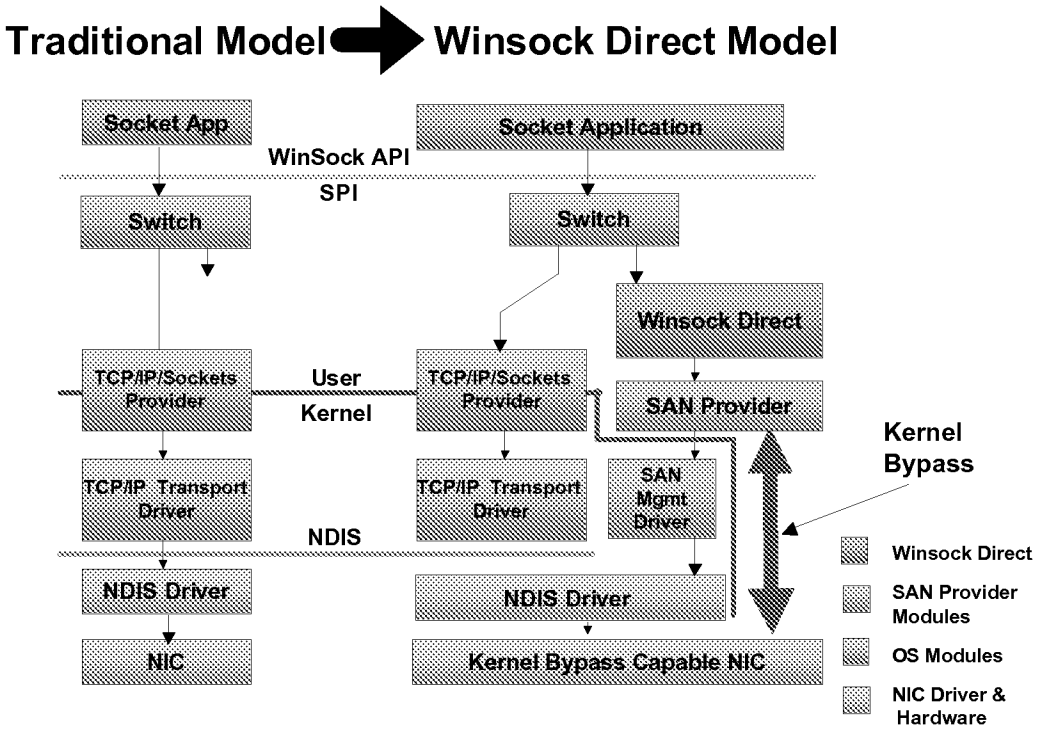
### A. Rejection of Dependent Claim 14

The Examiner stated the following in the Final Office Action (*see* pages 10-11):

> "For claim 14, Boucher does not disclose the unified driver is coupled to a software TCP processor and to a socket service switch, wherein the software TCP processor is coupled to the socket service switch However, **Microsoft discloses the unified driver is coupled to a software TCP processor and to a socket service switch**, wherein the software TCP processor is coupled to the socket service switch (Microsoft, fig. 1, **a socket switch between a TCP/IP socket provider and a SAN provider**), and wherein the socket service switch is coupled to a socket service (Microsoft, fig. 1, switch coupled to socket application).
>
> Therefore, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Boucher and Microsoft to provide WinSock socket service switch to a TCP/IP-offload-enabled NIC

card of Boucher in order to further enhance the card with more functionalities such as RDMA traffic support."

In order to help understanding, the Appellant has inserted Microsoft's Fig. 1 for reference:




The Examiner equates Microsoft's SAN provider to Appellant's "unified driver". However, the Appellant points out that **Microsoft's SAN provider** (the alleged "unified driver") **is coupled to only the service provided through the Winsock Direct**. In this regard, Microsoft does not disclose or suggest "a plurality of services coupled to the unified driver," as recited in Appellant's claim 12.

In addition, the Examiner also equates Microsoft's TCP/IP socket provider, switch and socket application to Appellant's "software TCP processor", "socket service switch" and "socket service", respectively. Even though Microsoft's TCP/IP socket provider (the alleged "software TCP processor") is coupled to the switch (the alleged "socket service switch"), and the switch (the alleged "socket service switch") is coupled to the socket application (the alleged "socket service"), nevertheless, Microsoft's TCP/IP socket provider (the alleged "software TCP processor") is **not coupled to the SAN provider** (the alleged "unified driver"). It is clear that the switch (the alleged "socket service switch") has created two separate paths, namely the conventional path to the TCP/IP sockets provider (the alleged "software TCP processor"), and the Winsock direct path, which is coupled to the SAN Provider (the alleged "unified driver").

In this regard, Microsoft at least does not disclose or suggest "the unified driver is coupled to a software TCP processor and to a socket service switch," as recited in Appellant's claim 14. Claim 14 is submitted to be allowable based on this rationale.

### B. Rejection of Dependent Claim 12

The Examiner stated the following in the Final Office Action (*see* page 11):

> "For claim 12, Boucher-Microsoft discloses the invention as in claim 14. Boucher-Microsoft further discloses a plurality of services coupled to the unified driver (Microsoft, fig. 1, p. 5 lines 7-8, socket service, RDMA service)."

The Examiner is referred to Appellant's argument in claim 14 above, namely, **Microsoft's SAN provider** (the alleged "unified driver") **is coupled to only the service provided through the Winsock Direct**. In this regard, Microsoft does not disclose or suggest "a plurality of services coupled to the unified driver," as recited in Appellant's claim 12. Claim 12 is submitted to be allowable based on this rationale.

### C. Rejection of Dependent Claim 13

The Examiner stated the following in the Final Office Action (*see* page 11):

> "For claim 13, Boucher-Microsoft discloses the invention as in claim 14. Boucher-Microsoft further discloses the particular service comprises at least one of a socket service, a SCSI miniport service, an RDMA service and/or a keyboard and/or video and/or mouse service (Microsoft, fig. 1, p. 5 lines 7-8, socket service, RDMA service)."

Claim 13 is dependent on claim 12, and is submitted to be allowable based on the rationale stated above regarding claim 12.

### D. The Rejection of Claim 21 Using Official Notice

Claim 21 is rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 18 above, and further in view of Official Notice (hereinafter "ON").

The Examiner states the following in page 12 of the Final Office Action:

> Boucher does not disclose employing time division multiplexing to determine which of the different types of network traffic access the software services via the single data path.

> However, **Official Notice is taken** that it is well known in the art how to employ time division multiplexing (TDM) to transmit multiple traffics over one channel in different timeslots. Microsoft Computer Dictionary (fifth edition) defines time division multiplexing as a form of multiplexing in which transmission time is broken into segments, each of which carries one segment of one signal or traffic type.

The Appellant points out that the Examiner has cited Microsoft Computer Dictionary (fifth edition) in support of the Official Notice and to show TDM to transmit segments of one signal or traffic. The Applicant specifically challenged the perceived and explicit assertions of Official Notice with regard to dependent claim 21, namely, "...**time division multiplexing** to determine which of the different types of network traffic **access the software services via the single data path**" is well known in the art. In response, the Examiner (*see* Final Office Action in page 4) stated the following:

> "TDM is a type of multiplexing in which **two or more signals or bit streams are transferred apparently simultaneously as sub-channels in one communication channel**, but are physically taking turns on the channel. The time domain is divided into several recurrent timeslots of fixed length, one for each sub-channel. Given that TDM is so well known in the art, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Boucher and what is well known in the art to **determine which of the different types of network traffic at which timeslot to access the data path by allotting multiple traffic segments of different types over one channel in different time slots using TDM** in order to minimize cost and complexity of building multiple channels unnecessarily."

The Examiner, in effect, argued that TDM is well known for time multiplexing in a single channel, **for transfer of two or more signals or bit streams**. However, Applicant's claim recites "**time division multiplexing** to determine which of the different types of network traffic **access the software services via the single data path**". In

other words, the claimed TDM is **for accessing software services** via the single channel, and **not for transfer of signals or bit streams**, as alleged by the Examiner. In this regard, the Applicant maintains that TDM is not well known for "**accessing software services** via the single channel," as recited in Applicant's claim 21.

The Appellant submits that claim 21 is allowable. In addition, based on at least the foregoing, the Appellant believes the rejection of the independent claims 1 and 18 under 35 U.S.C. § 102(e) as being anticipated by Boucher has been overcome and should be withdrawn. The Appellant submits that claim 21 depends directly or indirectly from independent claim 18, and is, consequently, also respectfully submitted to be allowable, and requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

## V. The Proposed Combination of Boucher and Yang Does Not Render Claim 22 Unpatentable

Claim 22 is rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 18 above, and further in view of Yang.

Based on at least the foregoing, the Appellant believes the rejection of the independent claims 1 and 18 under 35 U.S.C. § 102(e) as being anticipated by Boucher has been overcome and should be withdrawn. Yang does not overcome Boucher's deficiency in disclosing the Appellant's limitation. In addition, the Appellant submits that claim 22 depends directly or indirectly from independent claim 18, and is, consequently, also respectfully submitted to be allowable, and requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

### A. Rejection of Dependent Claim 22

The Examiner stated the following in the Final Office Action (*see* page 13):

> "For claim 22, the claim is rejected for the same rationale as in claim 18. Boucher does not disclose dynamically allocating fixed resources among the different types of network traffic.
>
> However, Yang discloses dynamic and fixed resource allocation for time division multiplexing (abstract) It would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Boucher and Yang to allocate fixed resources among traffic types to allow optimize the use of resource such as service rate while maintaining quality of services (Yang, [0018])"

The Appellant points out that Yang's dynamic scheduling of the data packets (see abstract and ¶0018) pertain to the physical data L2 level only. In this regard, Yang does not disclose "dynamically allocating fixed resources between among the different types of network traffic," as recited in claim 22. Claim 22 is submitted to be allowable based on this rationale.

## VI. The Proposed Combination of Boucher and Hayes Does Not Render Claims 5-8 and 24-28 Unpatentable

Claims 5-8 and 24-28 are rejected under 35 USC 103(a) as being unpatentable over Boucher, as applied to claim 1 above, and further in view of Hayes.

Regarding the rejection of independent claim 24, the Appellant submits that the same rationale supporting the allowability of claim 1 is applicable, that the fast path and slow path packets handled by Boucher's MAC 402 are not different network traffic

types. Hayes does not overcome Boucher's deficiency in disclosing the Appellant's limitation. Based on at least the foregoing, the Appellant believes the rejection of the independent claim 24 under 35 U.S.C. § 103(a) as being anticipated by Boucher in view of Hayes has been overcome and should be withdrawn. In addition, the Appellant submits that claims 5-8 and 25-28 depend directly or indirectly from the independent claims 1 and 24, and are, consequently, also respectfully submitted to be allowable, and requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

## VII. The Proposed Combination of Boucher and Callaghan Does Not Render Claims 29-31 Unpatentable

Claims 29-31 are rejected under 35 USC 103(a) as being unpatentable over Boucher, and further in view of Callaghan.

Regarding the rejection of independent claim 29, the Appellant submits that the same rationale supporting the allowability of claim 1 is applicable, that the fast path and slow path packets handled by the PCI bridge 157 and INIC miniport driver 306 are not different network traffic type. Callaghan does not overcome Boucher's deficiency in disclosing the Appellant's limitation. Based on at least the foregoing, the Appellant believes the rejection of the independent claim 29 under 35 U.S.C. § 103(a) as being anticipated by Boucher in view of Callaghan has been overcome and should be withdrawn. In addition, the Appellant submits that claims 30-31 depend from the independent claim 29, and are, consequently, also respectfully submitted to be allowable, and requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

The Appellant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of claims 1-31 should such a need arise.

## CONCLUSION

For at least the foregoing reasons, the Appellant submits that claims 1-31 are in condition for allowance. Reversal of the Examiner's rejection and issuance of a patent on the application are therefore requested.

The Commissioner is hereby authorized to charge $540 (to cover the Brief on Appeal Fee) and any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

Respectfully submitted,

Date: February 19, 2010

/ Frankie W. Wong /

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## CLAIMS APPENDIX
## (37 C.F.R. § 41.37(c)(1)(viii))

1. A server, comprising:

a network connector;

a processor coupled to the network connector, the processor operable to process a plurality of different types of network traffic, wherein each of said plurality of different types of network traffic corresponds to a different network protocol;

a peripheral component interface (PCI) bridge coupled to the processor; and

a unified driver coupled to the PCI bridge, the unified driver operable to provide drivers associated with the plurality of different types of network traffic.

2. The server according to claim 1, wherein the network connector comprises an Ethernet connector.

3. The server according to claim 1, wherein the plurality of different types of network traffic comprises two or more of common Ethernet traffic, offload traffic, storage traffic, interprocess communication (IPC) traffic, management traffic and/or remote direct memory access (RDMA) traffic.

4. The server according to claim 1, wherein the processor comprises a single integrated chip.

5. The server according to claim 1, wherein the processor comprises a layer 2 network interface card (L2 NIC), a transmission control protocol (TCP) processor and a ULP processor.

6. The server according to claim 5, wherein the TCP processor provides layer 3 processing and layer 4 processing.

7. The server according to claim 5, wherein the TCP processor is shared by two or more of TCP offload traffic, Internet small computer system interface (iSCSI) traffic and/or RDMA traffic.

8. The server according to claim 5, wherein the ULP processor provides iSCSI processing.

9. The server according to claim 5, wherein the ULP processor provides RDMA processing.

10. The server according to claim 1, comprising:

a server management agent coupled to the processor.

11. The server according to claim 1, wherein the server management agent is coupled to a keyboard and/or video and/or mouse service.

12. The server according to claim 1, comprising:

a plurality of services coupled to the unified driver.

13. The server according to claim 12, wherein the plurality of services comprises two or more of a socket service, a SCSI miniport service, an RDMA service and/or a keyboard and/or video and/or mouse service.

14. The server according to claim 1,

wherein the unified driver is coupled to a software TCP processor and to a socket service switch,

wherein the software TCP processor is coupled to the socket service switch, and

wherein the socket service switch is coupled to a socket service.

15. The server according to claim 1, wherein the processor or the PCI bridge determines which of the different types of network traffic accesses a particular service provided by the server.

16. The server according to claim 15, wherein the particular service comprises one or more of a socket service, a SCSI miniport service, an RDMA service and/or a keyboard and/or video and/or mouse service.

17. The server according to claim 1, wherein the processor, the PCI bridge or the unified driver provides a unified data and control path.

18. A method for network interfacing, comprising:

handling a plurality of different types of network traffic via a layer 2 (L2) connector, wherein each of said plurality of different types of network traffic corresponds to a different network protocol;

processing the different types of network traffic in a single chip; and

determining which of the different types of network traffic accesses software services via a single data path.

19. The method according to claim 18, wherein the plurality of different types of network traffic comprises two or more of common Ethernet traffic, offload traffic, storage traffic, interprocess communication (IPC) traffic, management traffic and/or remote direct memory access (RDMA) traffic.

20. The method according to claim 18, wherein the L2 connector is a single L2 connector.

21. The method according to claim 18, wherein said determining which of the different types of network traffic accesses software services via a single data path comprises employing time division multiplexing to determine which of the different types of network traffic access the software services via the single data path.

22. The method according to claim 18, wherein said determining which of the different types of network traffic accesses software services via a single data path comprises dynamically allocating fixed resources between among the different types of network traffic.

23. The method according to claim 18, comprising:

providing drivers associated with the plurality of different types of network traffic via a unified driver.

24. A method for network interfacing, comprising:

handling a plurality of different types of network traffic via a single Ethernet connector, wherein each of said plurality of different types of network traffic corresponds to a different network protocol;

processing the plurality of different types of network traffic using a layer 2 (L2) processor, a layer 3 (L3) processor, a layer 4 (L4) processor and an upper layer protocol (ULP) processor; and

providing a unified data and control path.

25. The method according to claim 24, wherein the L2 processor comprises a single L2 network interface card (NIC).

26. The method according to claim 24, wherein the L3 processor and the L4 processor are combined into a single TCP processor.

27. The method according to claim 24, wherein the ULP processor comprises one or both of an Internet small computer system interface (iSCSI) processor and/or a remote direct memory access (RDMA) processor.

28. The method according to claim 24, comprising:

providing drivers associated with the plurality of different types of network traffic via a single unified driver.

29. A unified driver, comprising:

a computer program executable on a computer system, having at least one code section for arranging and processing network traffic, wherein the at least one code section causes the computer system to perform steps comprising: executing said at least one code section from said unified driver in said computer system to handle a plurality of different types of network traffics and/or network services via a single PCI bridge, wherein each of said plurality of different types of network traffic corresponds to a different network protocol, and the network services comprise two or more of a socket service, storage service, RDMA service or keyboard/video/mouse service.

30. The unified driver computer program on a computer system of claim 29, comprising coupling said single PCI bridge to an integrated chip to concurrently process a plurality of network traffics.

31. The unified driver computer program on a computer system of claim 30, wherein said plurality of network traffics comprise two or more of offload traffic, storage traffic, interprocess communication (IPC) traffic, management traffic and/or remote direct memory access (RDMA) traffic.

## EVIDENCE APPENDIX
## (37 C.F.R. § 41.37(c)(1)(ix))

(1) United States Pat. No. 6,226,680 ("Boucher"), entered into record by the Examiner in the 8/13/2009 Final Office Action.

(2) United States Pub. App. No. 2002/0198934 ("Kistler"), entered into record by the Examiner in the 8/13/2009 Final Office Action.

(3) Microsoft Winsock Direct and Protocol Offload on SANs, 03/03/2001 ("Microsoft"), entered into record by the Examiner in the 8/13/2009 Final Office Action.

(4) United States Pub. App. No. 2002/0041566 ("Yang"), entered into record by the Examiner in the 8/13/2009 Final Office Action.

(5) United States Pub. App. No. 2003/0046330 ("Hayes"), entered into record by the Examiner in the 8/13/2009 Final Office Action.

(6) Callaghan (NFS over RDMA) ("Callaghan"), entered into record by the Examiner in the 8/13/2009 Final Office Action.

## RELATED PROCEEDINGS APPENDIX
## (37 C.F.R. § 41.37(c)(1)(x))

The Appellant is unaware of any related appeals or interferences.